

NASA REVIEW COMPLETED

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(S) NATIONAL RECONNAISSANCE OFFICE

WASHINGTON, D.C.

December 17, 1973

OFFICE OF THE DIRECTOR

MEMORANDUM FOR ASSOCIATE DEPUTY DIRECTOR FOR SCIENCE
AND TECHNOLOGY, CIA

SUBJECT: A Report on the Effects of Weather

25X

The concern expressed in your memorandum of December 6, 1973, that such a complicated subject as weather effects might lead to some misunderstandings is shared by the NRO. Statistical examinations are subject to misinterpretations or misapplication, and there is always a danger in summarizing a large body of statistical data. Consequently, errata and clarifying addenda have been initiated by the NRO Staff.

The approach taken and the data derived are applicable to all NRP systems.

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The errata and addenda noted above will be published shortly. Since these added materials touch on some of your concerns, I suggest OD&E and NRO staff discussions.

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NRO

NRO, NASA and DOS review(s) completed.

John L. McLucas

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SUBJECT: NSC Under Secretaries Committee Memorandum
for the President on International Impli-
cations of Coalescence of the NOAA/NASA
and DOD Polar-Orbiting Weather Satellite
Systems dtd 4 Dec 73

3. The subject international-implications problem, to which the USC was asked to limit itself, arose in the course of an OMB effort. OMB seeks to reduce the projected costs of the next phase of the NOAA/NASA program by substituting some form of coalescence of the DOD and NOAA/NASA programs in place of the approximately [] TIROS-N NOAA/NASA program and its hundreds of associated civil service jobs. I believe that the operational, technical, and budgetary considerations are also of high significance to the overall decisions about the degree and form of coalescence, if any.

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4. In view of the narrow nature of the particular problem and the non-[] access framework of the USC working group and most of its members, the NRO agreed to undertake the staff action in this matter, working through the "white" Air Force, JCS, and OSD/DOD members of the working group. We have observed the action with regard to coverage of CIA's interests. This arrangement has been satisfactory.

5. If the matter of coalescence is raised with him, I recommend that the DCI or his representative take the following position:

a. No form of coalescence should include non-DOD management of the DOD system, nor mandatory acceptance of civilian task requirements by the DOD system.

b. Operational and technical factors should be given strong consideration in deciding what to do.

LESLIE C. DIRKS

Director

of

Development and Engineering

Att:

DDS&T-3850-73 dtd 5Dec73
subj as above w/cy of
NSC Under Secretaries
Committee Ltr dtd 4Dec73
NSC-U-DM-177/Memo for the
President

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Systems. dtd 4 Dec 73

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(17 December 1973)

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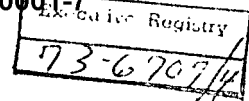
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DEPARTMENT OF STATE

Washington, D.C. 20520



NSC UNDER SECRETARIES COMMITTEE

DD/S&T#3850-73

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NSC-U/DM-117

DEC 5 1973

TO: The Deputy Secretary of Defense
 The Assistant to the President for
 National Security Affairs
 The Director of Central Intelligence
 The Chairman of the Joint Chiefs of Staff
 The Under Secretary of Commerce
 The Director, Office of Management and
 Budget
 The Administrator, National Aeronautics
 and Space Administration
 The Director, United States Information
 Agency
 The Director, National Science Foundation

SUBJECT: International Implications of Coalescence
 of the NOAA/NASA and DOD Polar-Orbiting
 Weather Satellite Systems

The Acting Chairman has forwarded the
attached Memorandum for the President. It is
hereby forwarded for your information.

Brandon Grove, Jr.
Staff Director

Attachment:

As stated

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UNDER SECRETARY OF STATE
FOR POLITICAL AFFAIRS
WASHINGTON
NSC UNDER SECRETARIES COMMITTEE

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NSC-U/DM-117

December 4, 1973

MEMORANDUM FOR THE PRESIDENT

Subject: International Implications of Coalescence
of the NOAA/NASA and DOD Polar-Orbiting,
Weather Satellite Systems

As directed, the Under Secretaries Committee has reviewed the proposed coalescence of the NOAA/NASA and DOD polar-orbiting weather satellite systems into one system or into two systems having more common characteristics than at present. Technical and budgetary aspects as such are beyond the scope of this report. International implications are reviewed in the enclosed report, and the key questions are addressed below.

1. What are likely to be the major elements of international concern in a coalesced program?

U.S. legislation and policies in space and weather satellite activities have placed primary responsibility in civilian agencies except that, as provided in the 1958 Space Act, "activities peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the U.S." are the responsibility of the Defense Department.

Depending on the form and extent of coalescence:

-- Suspicions might be raised that the civil part of the coalesced program was concerned with activities "peculiar to or primarily associated with" military objectives.

-- Perception of a change in U.S. policy regarding the "peaceful uses of outer space" could intensify questions concerning legal aspects of our earth resources satellites and, possibly by extension, our right to acquire data from space for other purposes.

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(However, the DOD believes that in view of open knowledge of current military and civil weather systems, coalescence would not arouse significant adverse reaction.)

2. What would be the effects of failing to meet our international commitments?

The present and planned NOAA/NASA system is designed to support domestic requirements and international commitments (cooperative programs for weather forecasting and storm warning and for global atmospheric research). Over 70 countries have invested in ground stations. Two are preparing instruments for the NOAA/NASA satellites.

In principle, it should be possible for a coalesced program to meet these commitments. However, if either the character of the coalesced program or budgetary constraints should result in our failing to meet the technical requirements and schedule of our international commitments, the following could result:

-- Present arrangements and plans for sharing meteorological data might be disrupted, and other countries might reassess their own commitments, including improvements of their programs of importance to us.

-- Other countries might seek their own polar-orbiting systems, thereby diverting resources from complementary programs designed to achieve well-balanced, cooperative capabilities. (The DOD believes that the relative value of geosynchronous satellites to other countries may be sufficient to preclude a shift to additional polar-orbiting satellites, while NOAA and NASA contend that a polar-orbiting satellite system is the priority requirement.)

Conclusions

For several possible approaches to coalescence, the Committee (with the indicated exceptions) has reached the following conclusions on potential international implications:

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-- Two systems, under separate civil and military management, with the use of common components for economy: Adverse international reaction would not be expected if coalescence: (a) meets our international commitments, and (b) involves the use of common launch facilities and appropriate spacecraft components, but leaves in the civil agencies management of the civil program from planning to execution.

-- A single system under civil management: Provided international commitments are met, a single coalesced program under civilian management designed to meet military as well as civil requirements could probably be structured to avoid significant adverse reaction. (The DOD, however, believes that coalescence under civil management would lead to substantially the same adverse reactions, if any, as coalescence under military management.)

-- A single system under military management, or under "joint" management with DOD managing spacecraft design, instrumentation, integration, and procurement: Either approach could lead to the problems outlined in (1) above since other countries might perceive a significant increase in military influence in comparison with the existing civil program. (NASA and NOAA believe that these problems would also arise if DOD controlled all direct access to data in a coalesced system.)

The Office of Management and Budget has reserved its opinion and does not take a position at this time on this memorandum, but has submitted staff comments for attachment to the report. Additional views submitted jointly by NOAA and NASA are also attached to the report.

As Chairman of the USC, I recommend that if a decision is made to proceed with coalescence, (a) a determination should be made either that the chosen form of coalescence is concordant with established policies, or that an exception or change in policy is being introduced, and (b) this determination should be publicly announced.


William J. Porter
Acting Chairman

Attachments:
As stated.

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NSC Under Secretaries Committee Report on
Proposed Coalescence of NOAA/NASA and DOD
Polar-Orbiting, Weather Satellite Systems 1/

As requested by Dr. Kissinger in his memorandum of October 23, the USC has considered the proposed coalescence of Department of Defense (DOD) and National Oceanic and Atmospheric Administration/National Aeronautics and Space Administration (NOAA/NASA) polar-orbiting, weather satellite systems, "into one system or into two systems having more common characteristics than at present". We have examined the implications of this general proposal "as they might relate to our international obligations, to our commitments in scientific cooperation, and to the conceptions underlying our space and meteorological policies". The technical and budgetary aspects of coalescence were not included within the scope of the USC study assignment. For this reason, the USC did not review, and takes no position on, the findings of the two related studies conducted at the request of the Office of Management and Budget (the NOAA/DOD/NASA Meteorological Satellite Analytic Study completed May 8, 1973, and its technical review conducted by the Science and Technology Policy Office of the National Science Foundation, completed October 26, 1973.)

The NOAA/NASA polar-orbiting satellites, collectively known as TIROS, are part of a larger international system of weather satellites, planned under the general cognizance of the World Meteorological Organization (WMO), which also includes geo-synchronous satellites. The latter are not involved in the coalescence proposal.

The U.S. Air Force disclosed the existence of a separate military system of polar-orbiting meteorological satellites in a press conference on March 7, 1973. Officials of NASA and NOAA have been aware of the military system since its inception. This system provides DOD with timely,

1/ Participants in this study represented the Department of Defense, the Joint Chiefs of Staff, the Department of State, the Central Intelligence Agency, the National Security Council, the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, the Office of Management and Budget, and the Science Adviser to the President. The OMB does not concur in this report for reasons covered in its attached statement.

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high-quality meteorological data to support world-wide strategic and tactical missions of the U.S. Armed Forces. Unclassified data derived from this system have been provided, on request, to certain foreign governments (see Appendix 1, supplied by DOD).

It is the next generation of the DOD system, termed Block 5D, and the next generation of the NOAA system, TIROS-N, to which current proposals for coalescence are directed. It should be noted that the total number of satellites in orbit would probably be the same as at present (two DOD, one NOAA) whether coalescence is into one system or into two systems with more common characteristics.

National and International Roles of the Civil Meteorological Satellite System

The NOAA system serves two related functions:

1. the provision of essential meteorological data (cloud cover, air temperature as a function of altitude) to the weather reporting and forecasting authorities in the U.S. (civil and military) and around the world; and
2. the provision of similar data to atmospheric research programs, domestic and foreign.

This system contributes to two international programs sponsored by the WMO, the world-wide, cooperative, operational program for the exchange of weather data, the World Weather Watch (WWW), and the major international scientific effort in meteorology, the Global Atmospheric Research Program (GARP), whose major experiment is scheduled for 1977-1978.

In Appendix 2, NOAA has provided details of the technical capabilities of the polar-orbiting weather satellite system it deems essential to meeting domestic requirements and international commitments. Two specific points deserve attention here. First, the Automatic Picture Transmission system (APT), which permits foreign weather services in over 70 countries to receive directly

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from the satellite (i.e., without the need for communications with U.S. ground facilities) current weather data for their own geographic area, is uniquely important to all the national weather services involved, particularly as regards their ability to provide timely warning of severe storms. Second, results from the polar-orbiting weather satellite program will complement data from geosynchronous satellites to be operated by NOAA, Western Europe, Russia, and Japan, and also data derived from other, national weather observation facilities. It is important to recognize that because the weather in any area is a manifestation of the dynamic behavior of the global atmosphere, optimum U.S. and foreign weather forecasting is necessarily dependent on the complete and immediate exchange of data on an international basis.

Legislative History

The legislative and administrative history of U.S. space and weather satellite activities, starting with the Space Act of 1958, has placed primary responsibility in civilian agencies. The open, peaceful, cooperative aspects of our applications and scientific space programs have been stressed. (Some of this history is summarized in Appendix 3, supplied by NASA and NOAA.) The DOD has played an important and sometimes an initiating role in these developments. There are a number of civil international meteorological programs with DOD participation, and DOD programs that supply meteorological data for international exchanges (see Appendix 1). However, the intent of both the executive and legislative branches has been to maintain and strengthen program responsibility in the civilian agencies, except that, in the language of Section 102(b) of the Space Act, "activities peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the U.S.", were to be the responsibility of DOD.

The TIROS system has been conducted as a joint NOAA/NASA program. The civilian character of the TIROS program reflects the above policies. The Presidentially-approved Operational Meteorological Satellite System (NOMSS) plan of 1961 reaffirms these principles. In view of the legislative and administrative history of space and weather satellite activities as outlined in Appendix 3, the USC has concluded

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that coalescence should either be concordant with the established policies or else an exception or change in law should be sought.^{2/}^{3/}

International Implications of Coalescence

The USC has focused its attention primarily on the international implications of coalescence. There are, of course, important domestic implications involved. Of these, the most important would seem to be: the budgetary implications; the implications for program scheduling; and the reaction of the Congress to a real or perceived change in the legislative and policy aspects cited earlier. An analysis of these and possibly other domestic implications is beyond the scope of this paper.

Four areas of international implications are taken up briefly in the material which follows.

1) Recalling the specific language regarding the civilian character of the space program incorporated in the Space Act of 1958 as cited earlier, should there be coalescence of the DOD and civil polar-orbiting weather satellite

^{2/} (by OMB) A statement on November 7, 1973 by Senator Moss, Chairman of the Senate Aeronautical and Space Sciences Committee suggests that coalescence to a system managed by the military might be viewed as a change in policy rather than law. See Congressional Record pp. S20050-51.

^{3/} (by DOS) In his statement, Senator Moss said that major policies are at stake, including "the policy, carefully laid down 15 years ago and painstakingly followed since, that the peaceful activities in space be conducted by civilian agencies of the U.S. government. This policy is the touchstone of the National Aeronautics and Space Act of 1958."

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systems under military management, the application of established policy would be put in question.^{4/} It might be assumed that either we have made a change in the Space Act (or its interpretation), or that the coalesced polar-orbiting weather satellite program is indeed "peculiar to or primarily associated with" military purposes. If foreign governments assumed that the latter is true, their reaction would very likely be adverse.^{5/6/} In view of the long history of civil management of our national and international meteorological services (and the associated research), the assumption that a policy change had been made could also provoke an adverse reaction, if it leads to the suspicion that the resulting program is a "front" for a broader activity serving undefined military purposes.^{7/} On the other hand, since the existence of the DOD polar-orbiting weather satellite system has established the military interest in this satellite capability, such suspicion could conceivably arise no matter what management and characteristics other present and future systems of this same genre might have.

4/ (by DOD) Since the policy calls for separation of the military and civil activities, coalescence under either civil or military management would equally put the policy in question.

5/ (by DOD) This is an opinion without substantiating facts. The existence of a military meteorological satellite is known and has not produced such adverse reaction.

6/ (by DOD) There is ample evidence, however, that foreign governments regularly receive data from U.S. sources they know to be "peculiar to or primarily associated with" military purposes--without any evidence of "adverse reaction" on their part. See Appendix 1.

7/ See footnote number 4 by DOD.

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Nevertheless, it would seem that this would be less likely if the future civil or coalesced program clearly corresponds to established U.S. space and meteorological policies.

2) If practicable coalescence of any form should result in systems capabilities for the civil side significantly less than those already committed by the U.S. to WWW and GARP planning (including Automatic Picture Transmission of cloud cover, vertical temperature profile measurement and automatic collection of data from unattended sensors --see Appendix 2 for details), or if such coalescence should result in any constraints on the timely dissemination of the data obtained for civil purposes, all cooperating countries in the World Weather Program would be affected. Although we understand that coalescence could in principle meet all civil requirements, the USC is concerned about whether this would in fact be done. If meeting foreign commitments should prove not to be feasible due to budgetary or schedule constraints, with either a coalesced system or the current independent systems, the effect would be adverse to some unforeseeable degree. Present arrangements for sharing meteorological data might be disrupted and other countries might delay or forego improvements to their meteorological programs of importance to our weather services.

3) If the ultimate coalescence arrangements lead foreign governments to question the credibility of the U.S. commitments to WWW and GARP, as given in Appendix 2, or if foreign governments see "coalescence" as implying a shift toward military objectives in the U.S. civil program which they regard as unacceptable, "coalescence" could provoke demands for a polar-orbiting weather satellite capability independent of the U.S. system, under UN or possibly other, national auspices. Whether this is likely is, of course, uncertain. It should be recalled in this connection, however, that France and the UK originally intended to develop their own polar-orbiting systems. They decided to shift instead to geo-synchronous satellites with the result that there will be a better-balanced total international capability in light of NOAA's TIROS activities. Any reversal of their decision would represent duplication of effort and would leave the World Weather Program without all of the geo-synchronous satellites

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important to U.S. national, as well as international, weather service needs.^{8/}

4) "Coalescence", if perceived by other countries as increasing military influence over our civil weather satellite program, could provoke intensified international debate, particularly in the UN Outer Space Committee (OSC), on the move's broader implications regarding the U.S. posture toward the "peaceful uses of outer space." Such debate might well call into question, to a considerably greater degree than heretofore, our assumed right to orbit satellites for peaceful purposes over foreign territory. Both the OSC's Legal and Scientific and Technical Subcommittees would provide forums in the relatively near future for discussion of this issue, specifically as related to the U.S. Earth Resources Survey Satellite program;^{9/} however, a challenge to our right to acquire data from space in this context obviously could complicate both civil and military space activities in other vital areas.

The likelihood of a major negative response to "coalescence" in UN forums is not possible to forecast with certainty. It should be recognized, however, that foreign reactions to the various possible aspects of "coalescence" described above might well be cumulative. That is, an adverse reaction

^{8/} (by DOD) It should be noted that the geo-synchronous satellite will provide France and the UK as it does the United States with the ability to continually monitor weather systems threatening their territories and the surrounding regions. With the advent of the successful resolution by the U.S. of the technical problems associated with the development of operational geo-synchronous meteorological satellites, these countries could have been as much persuaded by the relative value to them of the synchronous over the polar satellites as they were by the prospect of having the U.S. provide supplementary atmospheric soundings from its polar orbiting satellite.

^{9/} (by DOD) The ERTS sensors have an order of magnitude higher resolution than any proposed U.S. polar-orbiting weather satellite, military or civilian. Other countries are, therefore, understandably concerned about the ERTS data. They are not concerned about meteorological data with 1/3 NM resolution.

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in one area would reinforce an adverse reaction in another. The USC believes that these potentially sensitive situations must be considered very carefully in arriving at a final decision on whether or not there will be coalescence of the TIROS and DOD polar-orbiting weather satellite systems, and if so, what form it should take.

Nature of Coalescence

According to Dr. Kissinger's memorandum of October 23, "OMB is examining the possibility of coalescing the TIROS-N and the DOD polar-orbiting weather satellites into one system or into two systems having more common characteristics than at present." In responding to its charge in terms of this general and broad concept of coalescence, the USC has attempted to answer the questions put to it in terms of several possible "levels" or degrees of coalescence.

In the view of the USC, the "implications" cited depend greatly on the management arrangements adopted, the characterization of the objectives of any such arrangements, and how these may be perceived by foreign nations. There are many kinds of cooperative management and divisions of responsibility possible in a coalesced program, including complete independence of an agency in certain restricted aspects of the program. Nevertheless, if there were a single coalesced polar-orbiting weather satellite program, the "management" entity necessarily would have the authority to resolve conflicts between different overall project objectives. This meaning of "management" is intended in the alternatives dealt with in the next section.

Possible Levels of Coalescence

In the paragraphs which follow, the USC has attempted to represent a wide range of possible degrees of coalescence in terms of several gross levels, and has given its estimate of the international implications associated with each.

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A. The Use of Common Components in Separate Civil and Military Systems

1. Use of DOD launch vehicles and launch crews for the NOAA TIROS-N satellite,^{10/} with open access to spacecraft for pre-launch operations by participating U.S. and foreign nationals.

Implications:

No international relations problems.

2. Independent systems under separate civil and military management of satellites, data links, and ground stations, but with common launch facilities (with open access as in A-1) and appropriate common use of identical spacecraft structures, power supplies, stabilization systems, instruments, etc.

Implications:

Little or no international relations problems.^{11/}

^{10/} (by NSC) The possibility of cost savings by the use of refurbished Air Force launch vehicles and crews also would apply to other civil satellite programs.

^{11/} (by DOD) This alternative can neither prevent the effect of budgetary restrictions on meeting international commitments, nor prevent possible suspicions arising from combining the military and civil programs.

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- B. A combined civil and military satellite system under civilian management

Implications:^{12/}

This alternative could probably be structured in such a way as to avoid serious international relations problems.

- C. A combined civil and military satellite system with all spacecraft procurement and launch under military management (with open access as in A-1), with the operational phase and ground stations of the civil satellite system under civilian management, and with corresponding operation of military satellites by DOD. (This alternative for the civil polar-orbiting weather satellite program, represents in essence a substitution of DOD for NASA in the present NOAA/NASA structure. Appendix 4, supplied by NOAA, provides a description of the current NOAA role.)

Implications:

Clear civilian control of operations of the civil satellite should reduce international concerns about the implications of a shift in basic policy, but the possibility of adverse reactions would remain since DOD could appear to be influencing spacecraft characteristics and would be flying similar spacecraft for its own purposes.

^{12/} (by DOD) Coalescence of the military program under civil management would lead to substantially the same international suspicions regarding the civil program as would coalescence under military management.

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- D. A combined civil and military satellite system under military management.

Implications:

This alternative could reasonably be viewed by others as a change in basic policy leading to increasing military influence in U.S. space and weather activities.^{13/} If so, the foreign reactions would likely be adverse, and could impact unfavorably on international cooperative

^{13/} (by OMB) Senator Moss' statement (see footnote number 2) implies that this alternative might be viewed as an attempt to eliminate unnecessary duplication or overlap in meteorological services. If coalescence produced more effective meteorological services at lower cost, other countries might view military management as a logical step consistent with declassification of the Defense Department's meteorological data. The OMB also submits that there are other programs where useful analogies to the proposed coalescence can be drawn. For example, it is currently planned that DOD will be responsible for all Space Shuttle launches and operations on the West Coast and NASA will be responsible for East Coast activities. This decision was made to avoid unnecessary duplication of services and thereby achieve managerial efficiencies. Moreover, it provides an additional precedent and an analogy useful for postulating potential international reactions to coalescence. It also provides a means for analyzing whether coalescence should be viewed as a change in U.S. policies regarding space.

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weather programs important to U.S. national needs, and other U.S. space projects.^{14/}

Comments

Alternative A does not involve international implications of any importance. Option A-2 offers the possibility of monetary savings while maintaining the separate character of the military and civilian programs.

Alternatives B, C and D also address themselves to the desire to achieve more efficient meteorological services at lower cost, since with the DOD declassification, there is no longer an absolute requirement for two separately-managed polar-orbiting weather satellite systems. However, alternatives C and D involve a substantial shift of responsibility from civilian to military agencies and the possibilities for adverse international reactions outlined earlier would be relevant. Moreover, adoption of either C or D could raise questions in Congress about inconsistency with legislative history of our space and meteorological programs. Alternative B would be less likely than C or D, but more likely than A-2, to raise domestic and international difficulties

^{14/} (by DOD) These same implications could arise from the change in basic policy involved in moving military programs into the civil program. There is also good reason to believe that any adverse reaction would not be severe. First, the public announcement on March 8, 1973 of the U.S. military meteorological satellite system has not produced any international ripples. Data from this military system have been requested by several foreign civil and international agencies, and have been supplied to them. Second, the proposed coalescence affects only one portion of the U.S. civil meteorological satellite system: the operational polar orbiter. The geo-synchronous program (SMS/GOES) and the experimental polar orbiter (NIMBUS) would be unaffected.

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related to long-established policies.^{15/}

If a form of coalescence is adopted which is judged above to have potential adverse international implications, a plan for addressing these implications should be developed before announcement of the new program. Should an arrangement approximating either C or D be adopted, the potential adverse international impact might be lessened if NOAA retains all of its roles as they currently exist in the NOAA/NASA joint program, as detailed in Appendix 4. An assessment of the budgetary impact and the feasibility of assigning these roles to NOAA in a coalesced program with DOD, is beyond the scope of this memorandum. Further, the USC has not addressed itself to how the time-scale for initial operation of a coalesced system affects the feasibility of meeting the various requirements.

In summary, The USC sees no objection to the principle of coalescence provided that:

1. the form it takes either is determined to be concordant with established policies or else an exception or change in policy or law is made (see also footnotes 2 and 3);
2. the resulting system or systems, while satisfying national security and civil requirements, will also reasonably meet the performance, schedule, and other commitments of our participation in international operational and scientific meteorological programs; and
3. the management arrangements adopted are not likely to invoke adverse foreign reactions of significant consequence, due to an actual or perceived change in U.S. space and meteorological policies.

^{15/} (by DOD) Alternatives B, C and D can be construed as departures from the same long-established policies but in different directions and the potential international difficulties are not demonstrably different.

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APPENDIX 1

(Supplied by DOD)

DOD ENVIRONMENTAL ACTIVITIES WITH INTERNATIONAL FEATURES

The following are examples of the open involvement of military elements and military managed programs and facilities in the acquisition of environmental data for international exchange or in the international exchange itself:

1. The existence of a military managed meteorological satellite and the availability of the data therefrom was announced publicly in March 1973. Foreign scientific communities (Germany, Japan, France, Netherlands, Thailand, Switzerland and India) have requested and been supplied meteorological data for research purposes from this military managed system.
2. Military elements have been and are planned to be openly involved in U.S. participation (managed by civil agencies) in international meteorological research programs such as Barbados Oceanographic and Meteorological Experiment (BOMEX), Global Atmospheric Research Project (GARP) and the GARP Atlantic Tropical Experiment (GATE).
3. The military managed Joint Typhoon Warning Center at Guam provides typhoon reports and forecasts for the western Pacific which are distributed over communications links of the World Meteorological Organization's (WMO) World Weather Watch (WWW). Foreign nations of the Pacific have depended on these typhoon reports and forecasts for decades.
4. The military managed U.S. hurricane and typhoon reconnaissance programs provide important data to the international meteorological community. Foreign countries of the western Atlantic, Caribbean, Gulf of Mexico, western Pacific and east Asian seas have depended on these programs for information on the location, movement and intensity of these great storms for over two decades.
5. Training for foreign meteorological students, both military and civilian, is provided at the military weather school at Chanute Air Force Base, Illinois.

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6. Ice forecasting services provided by military managed facilities are used by a large segment of the international community engaged in scientific research in the Antarctic for both resupply ships and oceanographic research ships. These facilities also provide and exchange sea ice information for the Northern Hemisphere directly with members of the international maritime community such as Iceland, Norway, Sweden, Canada and the United Kingdom.

7. Many foreign ships utilize the radio broadcasts of marine meteorological data and charts from military managed naval weather facilities.

8. There is open and direct provision by foreign governments (England, Germany and Japan) of international meteorological data gathered from their neighbors (China, Poland, East Germany, etc.), partially through WWW data links, to military weather communications terminals in England, Germany and Japan.

APPENDIX 2

(Supplied by NOAA)

Satellite Performance Required to Meet
NOAA and International Weather Service
and Atmospheric Research Plans and Commitments

1. Continuing Service Commitments

- A. The Automatic low-resolution Picture Transmission system, (APT) which permits foreign meteorological authorities in more than 70 countries equipped with a relatively simple ground terminal to obtain directly data on weather phenomena affecting their respective geographic regions. (Commitment made by letter dated December 28, 1971 from permanent representative of US to the World Meteorological Organization to the Secretary General of the WMO, including specification of frequencies to be used.)
- B. The high-resolution picture transmission system (HRPT), which permits foreign meteorological authorities equipped with an appropriate ground terminal to obtain directly high resolution visible and infrared data for local forecasting and applications. (See reference in A.)
- C. The vertical atmospheric temperature sounding capability (including microwave bands to see below the clouds) which permits obtaining data on the variation of air temperature with height. This information is vital to US and foreign weather forecasting and is an important US scientific commitment to routine weather services and to the GARP program. It will be available by direct readout to suitably equipped local ground stations. The UK has invested several million dollars in preparation for helping instrument the spacecraft with this capability. (Letter dated April 26, 1973 from permanent representative of US to WMO commits US to international distribution of computed satellite soundings over international teleprinted circuits, as well as capability for direct readout

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at local stations of measured radiance values. Letter from Administrator, NOAA, to Director General, the United Kingdom Meteorological Office dated February 22, 1972 commits US to atmospheric sounder subject to availability of appropriations.)

- D. Capability for global observation on routine basis day and night; continuous viewing of atmosphere; quantitative sounding of the atmosphere for numerical weather predictions; and data collection and broadcast. (World Weather Watch resolutions of the WMO Congress and executive committee and World Weather Watch planning report number 30/1969.)
- E. WEFAX (Weather Facsimile) broadcast via geostationary satellites include, on a routine basis, processed data from polar-orbiting satellites. Data are receivable nationally and internationally at APT-type ground stations within radio range of satellites.

2. Research Commitments

- A. All of the commitments in 1A through E above apply equally to the provision of data for research, in particular for GARP.
- B. The capability for automatically interrogating and locating high altitude weather observation balloons and unattended weather stations at remote ground locations and on ocean buoys. Both the US and France are conducting major high-level balloon experiments dependent on satellite interrogation systems. (Commitment reflected in NASA and CNES negotiations for a French data collection system plus numerous statements concerning US intent to conduct balloon and buoy interrogation programs.)

3. General Requirements

Provisions for integrating an instrument provided by a foreign organization; growth potential for future requirements; open access to

integration, launch, spacecraft and orbit control, and data reception and processing areas as has been historically true in international civil space programs; and orbital parameters consistent with the civil program requirements.

(Supplied by NASA & NOAA)

Background of Civil Space and Meteorological Programs

A. Space Program

There is an extensive record of executive and legislative intent that the nation's space program should be civilian in character and direction.

President Eisenhower in his special message to the Congress on April 2, 1958, on the bill which later became the National Aeronautics and Space Act, singled out this point in the following words:

"I recommend that aeronautical and space science activities sponsored by the United States be conducted under the direction of a civilian agency, except for those projects primarily associated with military requirements. I have reached this conclusion because space exploration holds promise of adding importantly to our knowledge of the earth, the solar system, and the universe, and because it is of great importance to have the fullest cooperation of the scientific community at home and abroad in moving forward in the fields of space science and technology.

Moreover, a civilian setting for the administration of space functions will emphasize the concern of our Nation that outer space be devoted to peaceful and scientific purposes."

Testimony on the bill overwhelmingly supported this view, even including extensive testimony from many senior military figures.

The Act itself provides as follows in Section 102(b):
"(b) The Congress declares that the general welfare and security of the United States require that adequate provision be made for aeronautical and space activities. The Congress further declares that such activities shall be the responsibility of, and shall be directed by, a civilian agency exercising control over aeronautical and space activities sponsored by the United States, except that activities

peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary to make effective provision for the defense of the United States) shall be the responsibility of, and shall be directed by, the Department of Defense; and that determination as to which such agency has responsibility for and direction of any such activity shall be made by the President in conformity with section 201(e)." (Underscoring added)

Section 201(e) indicates the following as among the President's functions:

"(3) designate and fix responsibility for the direction of major aeronautical and space activities."

"(4) provide for effective cooperation among all departments and agencies of the United States engaged in aeronautical and space activities, and specify, in any case in which primary responsibility for any category of aeronautical and space activities has been assigned to any department or agency, which of those activities may be carried on concurrently by other departments or agencies;"

In any question of the assignment of primary and concurrent responsibility under Section 201, the President would presumably be guided by the declared intent of the Congress in Section 102(b) that activities not peculiar to or primarily associated with weapons development, military operations or defense, shall be the primary responsibility of a civilian agency.

In this connection, the use of satellite weather data does appear overwhelmingly civilian in character, nationally and internationally.

Finally, the Act further provided as one of eight listed objectives, in Section 102(c) (7), that

that the Department of Commerce, "to the maximum extent practicable and permitted by law, will provide those basic meteorological services and supporting research needed to meet the requirements of other agencies." The circular, however, excluded from the provisions of the guidelines those meteorological activities involving special military security considerations.

"The Aeronautical and Space Activities of the United States shall be conducted so as to contribute materially to...cooperation by the United States with other nations and groups of nations in work done pursuant to this Act and in the peaceful application of the results thereof;"

B. Meteorological Program

The National Operational Meteorological Satellite System (NOMSS), was developed by the Department of Commerce, the Department of Defense, NASA and other agencies and approved by the President in 1961 in order to exploit the success of the TIROS weather satellites, the first of which was launched in 1960. Management responsibility for NOMSS was placed in NOAA's predecessor organizations with the DOC. DOC was enjoined to contract with NASA to "develop and/or procure ... the spacecraft, launch vehicles, and ground support equipment and to accomplish the launchings." It was further recommended that "foreign countries be phased into the program at an early enough date to allow them adequate time to develop their roles." The development of the TIROS Operational System was carried out through detailed planning and coordination between DOD, NASA and DOC to meet the most pressing DOD and DOC requirements at the earliest possible time. The TIROS system was warmly endorsed by the Secretary of Defense as noted in his letter to the Secretary of Commerce dated May 16, 1964. Over a period covering more than a decade statements by leaders in both the Executive and Legislative branches of our Government frequently emphasized the role of NOMSS both in meeting common meteorological requirements of the military and civilian weather services and as an important tool in furthering U.S. foreign policy goals through the sharing of peaceful uses of outer space.

A Bureau of the Budget Circular (A-62 of November 13, 1963) setting forth guidelines for the planning and conduct of Federal meteorological services reaffirmed the central role of the Department of Commerce with respect to meteorological services. The circular also directed

NOAA Roles in Present TIROS Program
and Requirements for NOAA Roles in Options C and D

Pre-Launch Phase (Applicable to Options C and D)

1. Develop civilian national and international data requirements.
2. Obtain appropriate resources through OMB, Congress. Manage those resources.
3. Negotiate and maintain liaison with international community.
4. Specify instrument requirements to meet civilian and international requirements. Review instrument design and performance throughout program.
5. Provide instruments when appropriate, both from national and foreign instrument specialists.
6. Specify and negotiate with technical agent* satellite bus characteristics. Communication links are of especial concern, especially for direct transmission links.
7. Participate directly in pre-launch calibrations related to data quality. This requires open access by civilian and foreign participants to satellite and related test equipment and facilities throughout program from integration to launch.
8. Specify and negotiate with technical agent on orbit parameters.
9. Specify and negotiate with technical agent on command, data acquisition, satellite engineering control, and communications ground facility capabilities which may be operated by or under contract to the technical agent.

* The technical agent is that entity of government directly responsible for contracting for, and monitoring of, the spacecraft, instruments, services, etc.

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Launch and Orbital Checkout Phase (C and D)

1. Participate in in-orbit calibrations.
2. Receive early data for ground facility and data processing checkout.

Operational Phase (D only)

1. Decide within engineering constraints the priorities and scheduling of satellite operations and data acquisition related to civilian and international requirements.
2. Have direct liaison with the engineering aspects of satellite operations and data acquisition, particularly for in-orbit trouble-shooting, as it affects data quality and availability.
3. The satellite engineering control center and at least one conveniently located command and data acquisition site must be open for visits from U.S. civilian and foreign visitors.
4. Operate the data processing facilities to convert raw satellite data to meteorological parameters and data sets for domestic and international users.

All Phases (C and D)

Open access to plans, satellites with their instruments, ground facilities, and data by U.S. civilian and foreign personnel.

In all options, criteria for replacement launch in the case of real or anticipated failure in orbit will give equal priority to the optical system of the DOD and the atmospheric sounder of NOAA.

STATEMENT BY NOAA AND NASA ON THE NEED FOR AN
EARLY DECISION ON THE PROPOSED COALESCENCE

NOAA and NASA wish to underscore the need for an early decision on the question of coalescence of the NOAA/NASA and DOD polar-orbiting weather satellite systems. Time is critical if the U.S. Government is to meet its international commitments for the First GARP Global Experiment. They prefer a decision against coalescence and for TIROS N to proceed. However, if coalescence is to take place, they are prepared to endorse option A-2 of the NSC Under Secretaries' Committee report, involving common components for economy and incorporating the following elements:

- 1) Separate and independent military and civilian meteorological systems (a sufficient number of spacecraft and ground stations to be directly and independently established and utilized by the military and civilian systems to meet their respective objectives and commitments);
- 2) Optimum use of common hardware, launch vehicles, and launch crews, as well as common procurement where appropriate;
- 3) Provision for mutual support, backup, and data exchange between civil and military systems through ground communication links (not through downlink exchanges); and

4) The modus operandi of the civil program to be as at present, both nationally and internationally (that is, both NASA and NOAA to fulfill the same functions as at present, data to be available on the same basis, NOAA downlinks on civil frequencies only, and access to spacecraft as at present).

NOAA and NASA propose that they and the DOD be directed to start discussions at once on the details of such coalescence so that they can move forward in critical areas without loss of time if this option is chosen.

OMB Staff Comments on NSC Under Secretaries
Committee Report on Proposed Coalescence of NOAA/NASA
and DOD Polar Orbiting, Weather Satellite Systems

OMB staff is concerned that the report in its present form is incomplete because of a lack of discussion of analogies and precedent. Furthermore, there are several instances in which the report could be improved if it included certain information regarding the technical adequacies of alternative satellite configurations.

The report argues that either a coalescence of the DOD and civil polar meteorological satellite systems under DOD management or an assignment of increased responsibilities to the DOD (for example, substituting DOD for NASA in the current NOAA/NASA arrangement) may:

- . be in violation of the Space Act of 1958, or
- . be viewed with suspicion internationally as a change in policy, and therefore
- . lead to undesirable actions by the world meteorological community.

One analogy and precedent which should be introduced in order to balance the report concerns the current planning for division of management responsibilities on the Space Shuttle. It is currently planned that the DOD will be responsible for all Space Shuttle operations on the West Coast and NASA will be responsible for East Coast activities. Thus, the DOD would be operating Shuttle orbiters in space in order to launch or retrieve spacecraft (whether military or civilian) that require a launch from a West Coast site.

This division of responsibilities will avoid duplication of services, achieve managerial efficiencies, and reduce the total cost of the Nation's space program. Thus, Shuttle planning appears to provide a clear precedent for assigning activities to the DOD even though the activities may not be "peculiar to ... military operations." This planning has been a matter of record for several years and has not been challenged as being in violation of the Space Act. Furthermore, it does not appear that the international community has perceived the planning to be a change in U.S. policy regarding the "peaceful use of outer space." In fact, the European Space and Research Organization plans to participate in the Space Shuttle program by developing a sortie lab.

Although the Under Secretaries Committee was not charged with reviewing whether the various alternatives would satisfy domestic requirements and international commitments, it appears that the technical adequacy of the alternatives is one of the key factors for hypothesizing about international implications. Therefore, we think it important to note that a review by Dr. Stever, acting in his capacity as Science Advisor to the President, has concluded that all the options being reviewed by OMB would be capable of meeting essentially all of these requirements and commitments.

In summary, while the study of international implications is an important component of a decision on the next generation meteorological satellite system, the final decision must take into account the interrelationships of international implications, technical adequacy, and budgetary impact.

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